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BUREAUCRACY AND ECONOMIC DEVELOPMENT

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This paper discusses the role of organizational performance in economic development. Public agencies that produce outputs that cannot be readily measured vary greatly in their efficiency. Some countries have overcome the difficulties associated with poorly measured outputs of public agencies and have established highly efficient civil services, following strategies that are discussed in the paper. These efficient bureaucracies have contributed substantially to economic development, as illustrated in this paper by the examples of France, Japan and Botswana.

1. INTRODUCTION

Organizations differ greatly in their effectiveness. In some schools, teachers teach, students learn, parents participate and needed educational materials are provided, while in others, classrooms are disorderly, materials are scarce and little learning takes place. Similarly, in some armies soldiers fight effectively while in others they avoid contact with the enemy where possible and disintegrate when such contact occurs. Similar contrasts in organizational performance appear in tax collection agencies, irrigation maintenance organizations, agricultural extension services, prisons and many other types of government organizations. The literature on organizations indicates that there is a remarkable degree of persistence in the performance of particular organizations; the ones that are excellent tend to remain so and it seems to be very difficult (though not always impossible) to reform poorly functioning organizations.

One important factor in explaining organizational effectiveness is the level of economic development of the country. As Max Weber observed, modernization is associated with the emergence of large and efficient organizations in both the private and public sectors. This association, however, leaves important questions unanswered. In the first place, the association is not an extremely close one, in that there seem to be considerable differences in administrative capacity among countries at similar income levels. In the second place, the direction of causation is not clear; do effective bureaucracies enable countries to attain high income levels? Or are there factors associated with higher income levels that permit bureaucracies to function more effectively? It seems very likely that both mechanisms are operating, but the mix of the two is an important question for understanding economic development. If it is

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true that efficient bureaucracies can emerge even at low levels of income and that efficient bureaucracies can help to raise the rate of economic growth, then understanding the determinants of bureaucratic effectiveness is important for explaining differences in economic growth and for devising policies to accelerate development.

One might conclude from the characteristic persistence of organizational performance that organizational effectiveness depends primarily on forces external to the organization, such as culture, values or societal attitudes towards the activity in which the organization is engaged or towards the kinds of people who engage in it. While the broader societal forces are surely important, there is another line of explanation for the persistence of performance levels of particular organizations. The type of explanation that will be presented here is based on the idea that people are motivated to a large degree by individual incentives rather than by cultural constraints, but the incentives facing an individual in an organization are moulded by the patterns of behaviour of the other members of the organization, especially the small number of people with whom the individual interacts on a regular basis. According to this line of argument, the persistence of organizational performance arises from the existence of 'good' and 'bad' equilibria within an organization; in the good equilibria, behaviour that is productive for the organization is rewarded, while in the bad equilibria, such behaviour brings little or no advantage to the individual and cheating and shirking go unpunished. In this picture of organizations, reform of a particular organization is not rendered impossible by external constraints, but it requires a non-marginal change in the set of rules and rewards and their enforcement.

Organizational effectiveness, it will be argued, depends on two kinds of behaviours. The first is rule obedience, which is the degree to which the members of the organization follow the rules laid down by the highest authorities and elaborated on by the managers. The second is effort, initiative and responsibility taken by members in order to further the goals of the organization (for short, this is referred to as EIR behaviour). [These concepts are discussed in Clague (1993).] In general, the most efficient organizations induce members to undertake a great deal of EIR behaviour and this behaviour may well involve violating some of the formal rules. In this sense, EIR behaviour is key to the higher levels of organizational functioning. On the other hand, the worst organizations generally exhibit low levels of rule obedience, as well as an absence of EIR behaviour. Thus, both types of behaviour are relevant to understanding organizational effectiveness and management strategies.

Organizations differ greatly in the degree to which their performance and the performance of individual members and teams of members can be measured. It is widely recognized that measurement issues are critical to understanding the differences in efficiency among types of organizations and to devising schemes for rewarding managers and employees. Economists have devoted most of their attention to issues arising in private firms, where measurement, while it may be difficult, is less problematic than in many government agencies. In the private sector, there is usually reasonably accurate measurement of the bottom line, which may be considered to be profits or the market value of the firm. Moreover, the accurate measurement of the organization's output often makes it easier to assess the productive contribution of individual members or teams. Public agencies typically differ from this characterization in a number of ways. First, there is often no overall measure of the performance of the agency and this typically complicates the task of assessing the performance of individual members. Second, there is typically no bottom-line termination mechanism for government agencies, so that very low levels of performance do not automatically lead to corrective measures, as they do when a private firm is losing money. Third, public agencies frequently have more than one master; the authority of these different masters is often uncertain and their degree of interest in the agency can fluctuate over time in unpredictable ways. Yet despite these problems, some public agencies seem to have operated at high levels of efficiency, at least compared to similar agencies at other times and in other places.

The goals of the present paper are 2-fold. First, it will argue that there are large differences across countries in the average level of organizational effectiveness and that these differences help to explain a variety of economic phenomena. In other words, it will be argued that economists have paid too little attention to this variable in their thinking about and modelling of international differences in economic outcomes. Second, the paper presents a model of organizational effectiveness that attempts to explain some of the features that are observed about organizational effectiveness, including the persistence of that effectiveness as described above.

The paper is organized as follows. The next section describes the framework that we shall use to model the efficiency of organizations. The framework, which is designed to be sufficiently flexible to apply to both private firms and public agencies, includes a controller supervising a manager and a manager supervising some workers. Section 3 presents two models of incentives for managers or workers; in one of them effort is measured with an unbiased error, while in the other output is measured by a proxy that is subject to some manipulation by the manager or worker. Section 4 then describes a classification of organizations according to the ways in which performance can be assessed. This classification is a modification of the one presented by Wilson (1989, Chapter 9). Different strategies for motivating managers and workers are considered. Section 5 discusses the political factors that have influenced the structure of the civil service in different countries and describes some of the ways in which the efficiency or otherwise of the government bureaucracy can affect the pace and character of economic development. Section 6 concludes.

2. THE FRAMEWORK

We seek a framework that is suitable for organizations with a wide variety of information structures. At one extreme we have a private firm controlled by an active outside investor who is interested in maximizing the profits from his firm. At the other extreme is a government agency supervised by a political authority who cannot measure the output of the agency in any meaningful way. We wish to use a common vocabulary to describe these two situations, as well as many intermediate cases.

The actors in our model are the controller, the manager and the workers. The controller is a principal and the manager is his agent. The controller devises the reward structure for the manager. The manager supervises the workers and devises the reward structure for them, subject to rules laid down by the controller. In some formulations the manager will become a principal and the workers will be his or her agents.

The organization produces an output y, which may or may not be measurable. Even if y is not measurable, there may be a proxy z, which is correlated with y and the controller may decide to reward the manager on the basis of the proxy z. For example, y might be the education of the students in a school and z might be an externally administered test of what the students have learned.

The workers can put forth two types of effort, called x_1 effort and x_2 effort. x_1 effort goes into activities that are fairly easy to measure, such as showing up for work on time, going through the motions of the work and turning out the measurable products of work activity (such as making arrests, grading student papers and writing reports). x_2 is the effort required to perform activities that enhance the productive contribution but are not easily measured. These activities include being careful to do the job correctly, thinking about how to get more done per hour, checking that the machinery is set up correctly and writing high quality reports. x_2 effort is defined as that effort that is not easy to observe directly, but the output of that effort may be observable.

The distinction between x_1 and x_2 effort is very similar to that between rule obedience and EIR behaviour (Clague, 1993). There may be a difference in some contexts, however, where compliance with the rules is not easy to observe. For example, the taking of bribes is rule-disobedient behaviour but may be difficult to detect and so refraining from taking bribes would not be considered part of x_1 effort. Another difference between the two distinctions is that some EIR behaviour may be quite observable, as, for example, when the employee works late in the office every evening (beyond what the rules prescribe). Still, most EIR behaviour is not observable just by watching the employee.

The utility of the workers is positively related to monetary payment and negatively related to the degree of x_1 and x_2 types of effort. It may also depend on some other aspects of the work experience such as the sense of being fairly treated, the feeling that one is doing something productive and the existence in the organization of *esprit de corps*. The manager's utility depends positively on remuneration and negatively on effort. The manager puts forth only one type of effort, which we can think of as being of type x_2. The manager's effort cannot be measured directly by the controller, although it may be inferred from the controller's measurement of the agency's output.

Let us think about the problem facing the manager, taking into consideration many dimensions of the problem, not all of which we intend to model. The decision variables include the following:

(i) Salary level.
(ii) Salary structure.
(iii) Organizational structure, location of personnel decisions.
(iv) Selection: recruiting criteria and expenses.
(v) Criteria for promotion, salary and termination.

(vi) Monitoring costs: measuring outputs of individuals and groups and detecting cheating.

This list reminds us of the ways in which a public agency is likely to differ from a private company. The private company is free to decide on all these variables, subject to some constraints from trade unions and government regulations. The company can set a high entry level salary, have a steep salary structure that depends on performance and can easily fire employees who don't measure up. The company can delegate to supervisors decisions about their employees, vesting a great deal of authority in these supervisors. The freedom of action of managers in public agencies is likely to be much more constrained. The salary level and structure are typically set by the controller and promotion and firing decisions are usually more centralized than in the private sector. To some extent these differential characteristics of public management can be explained by the measurability of effort and output in the two contexts.

Let us consider several types of incentive schemes that a manager might apply to her subordinates, who might be either junior managers or operative workers.

(i) Scheme A. Monitor the x_1 activities and discharge the workers who fall below the minimum standard of performance.
(ii) Scheme B. Devise a (possibly imperfect) way of measuring x_2 activities and pay bonuses or give promotions to those whose measured performance exceeds the stated criterion.
(iii) Scheme C. Measure the output of a team within the agency and reward all the members of the team.

The schemes that managers employ depend on a variety of factors, including in particular the nature of the tasks to be performed and the skill levels and personal characteristics of the employees. Many tasks performed by unskilled workers lend themselves to Scheme A. There are frequently some employees in every organization who are subject to this scheme (for example, assembly workers, secretaries, construction labourers). Where individual and team output is impossible to measure, however, such a scheme could sensibly be applied to junior managers as well. Scheme B is typically applied to car salesmen and real estate agents. In these cases, the output is particularly sensitive to individual rather than team effort and it is not very difficult to measure, hence pay can be partly proportional to measured output. In managerial tasks, the reward is more typically a bonus or promotion rather than a payment proportional to measured output. Scheme C would seem to be appropriate where the manager cannot easily observe the contribution of different members of the team but she can more readily measure the team's output. The suitability of this scheme also depends on the ability of the team members to observe one another's contributions and the proclivity of the team members to develop *esprit de corps*.

The choices among these incentive schemes will be modelled more formally in the next section.

3. TWO MODELS OF INCENTIVE SCHEMES

3.1. *A Model of Effort under Measurement Error*

There are a number of models in the labour economics literature of compensation schemes in the presence of imperfect monitoring of employee effort. These models have been designed for the most part to explain the behaviour of private sector firms (Parsons, 1984). We shall present a simple model of this type in order to contrast the ways in which effort is likely to be monitored and rewarded in public bureaucracies with those in the private sector.

To keep matters as simple as possible we shall ignore risk aversion on the part of the employee; risk aversion has well known implications and these can be brought into the discussion as needed. The model is applicable to a controller supervising a manager or to a manager supervising an individual worker. For concreteness, let us think of the manager supervising an individual worker.

The worker supplies effort x which the manager observes with an error e, so that the manager observes $q = x + e$. The error e has a zero mean and is uniformly distributed over the interval $[-c, +c]$. The manager employs the following incentive scheme. She pays the worker a wage, w, plus a bonus of B if measured effort q exceeds a specified level q_1.

The worker's expected utility is given by

$$\mathrm{EU} = \phi(x)B + w - bx^2$$

where $\phi(x)$ is the probability of getting the bonus and b is the parameter for the disutility of effort. We assume that the worker has a reservation expected utility U, which imposes a constraint on the payment scheme that the manager can offer.

The probability of getting the bonus, given the uniform distribution of the error e, is simply

$$\phi(x) = [x + c - q_1]/2c$$

Now the manager's problem is to maximize

$$\text{Profit} = Q(x) - w - \{[x + c - q_1]/2c\}B$$

where $Q(x)$ is the worker's marginal value product, subject to

$$U = w - bx^2 + \{[x + c - q_1]/2c\}B \tag{1}$$

Hence,

$$\text{Profit} = Q(x) - (U + bx^2)$$

and the manager would like the worker to choose x such that

$$Q'(x) = 2bx \tag{2}$$

The worker's problem is to choose x to maximize

$$\mathrm{EU} = w - bx^2 + \{[x + c - q_1]/2c\}B$$

which requires

$$2bx = B/2c \tag{3}$$

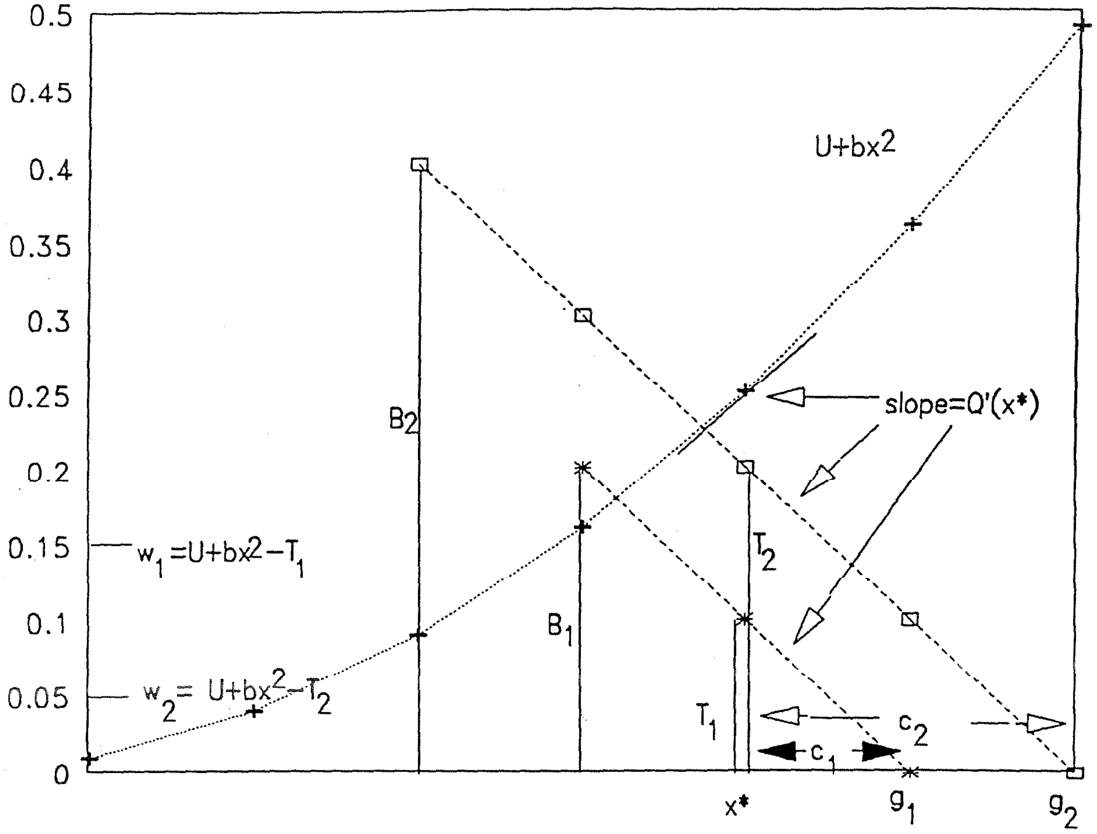

FIG. 1.

The manager should choose the parameters of the payment scheme so that equations (2) and (3) give the same value of x. Hence,

$$Q'(x) = B/2c \tag{4}$$

The manager could spend resources to improve the measurement of worker effort, that is, to reduce c. Under the present assumptions, however, she has no reason to do so. For any given value of c, the manager can set the bonus B to satisfy equation (4) and then select w and q_1 to satisfy the utility constraint equation (1). Thus, even with measurement error, the manager is able to elicit the efficient amount of effort. An important feature of this solution is that a greater margin of error in measuring effort requires a greater bonus.

The properties of the solution are illustrated in Fig. 1. The horizontal axis measures the effort x, while the vertical axis measures money income and utility. The efficient supply of x is given where the slope of the marginal value-product curve $Q(x)$ (which is not shown) equals the slope of $U + bx^2$. This point is labeled x^* in the graph. Let $g = x^* + c$. The bonus B can be represented by $Q'(x^*)2c$. This is shown by the values B_1 and B_2, corresponding to g_1 and g_2.

The base wage w is determined by equation (1), which we can write

$$w = U + bx^2 - T \tag{5}$$

where $T = Q'(x^*)(g - q_1)$. T is the expected value of the bonus. The manager can select a value of q_1 and then set w to satisfy equation (5). In the graph we have assumed that q_1 is set at the efficient level of effort x^*. The graph shows the value of T_1 and T_2 and the corresponding values of w_1 and w_2. A larger measurement error corresponds to a lower base wage as well as a higher bonus.[2]

The intuition behind the results of this model is as follows. As measurement error increases, a given increase in effort produces a smaller effect on the probability of getting the bonus, so the bonus must be larger to induce the same effort. As the bonus increases in size, for a given level of effort, the expected value of the bonus increases (assuming the minimum standard does not change) and, hence, the base wage can be reduced.[3]

If the worker is risk averse, the bonus will be smaller and the base wage somewhat larger (see Parsons, 1984, p. 815) and the solution is no longer efficient. Nevertheless, the conclusion that greater measurement error leads to a larger proportional bonus still holds [see also the similar conclusion from rank-order tournaments in Lazear and Rosen (1981)].

There are, however, constraints on the payment differentials that are feasible within an organization. Risk aversion has already been mentioned. In addition, workers may feel unfairly treated if large rewards are given for poorly measured outcomes. If now we assume that there are constraints on the bonus that may be paid, the model tells us that more accurate measurement of effort will lead to a great supply of effort (see equation 4). This point may help to explain the persistence of good and bad organizational performance in particular organizations. In the good equilibrium, where most employees are working hard and performing well, an employee who slacks off is easily noticed by the others and this behaviour is likely to become known by the manager as well. In the low-performance equilibrium the employees as a group have an incentive to conceal individual performances from the manager.

The above model can be thought of as applying to production workers, who might be paid by the piece or to junior managers, whose reward would be a promotion. In both of these cases, the effort being modelled is of the x_2 variety. For certain types of workers the manager might give up on trying to measure x_2 effort and simply monitor x_1 effort, where the measurement error is much smaller. In that case, the bad outcome for the worker would be getting fired or having his pay docked, while the good outcome would be getting his regular pay.

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[2] This conclusion assumes that the minimum standard q_1 does not change when c changes. This seems to be the natural assumption as there is no particular reason why q_1 should be adjusted when c changes.

[3] Note that even if the minimum standard is adjusted to maintain the same base wage, the bonus must increase and, hence, even in this case the ratio of the bonus to the base wage must rise. In this case, where the base wage is kept constant by adjusting the minimum standard, the expected value of the bonus is also kept constant

3.2. *A Model of Reward by a Proxy for Output*

In the above model it was assumed that there was a measure of worker effort that was unbiased and not manipulable by the worker. In this section we consider a model where the measurement can be manipulated. Suppose that there is a true output that cannot be measured and a by-product that can. For example, the output is the education of children by a school, while the proxy is the performance of the students on an externally administered test. The teachers of the school might be able to influence the students' test performance by coaching for the types of questions likely to be on the test. The focus of this model is not on the supply of effort but on the direction of that effort. For concreteness we think of a controller dealing with a manager.

The manager has at her disposal resources, r. She produces true output y with some or all of these resources. There is a by-product z that arises naturally from the production of y, but the production of z can be enhanced by diverting resources to that end. Let r_1 be the resources devoted to the production of y and r_2 be the resources diverted to enhancing the production of z. The production functions for y and z are

$$y = Ar_1$$

$$z = y[a + br_2]$$

where $r_1 + r_2 = r$. Thus, if no resources were diverted y would be A^*r and z would be aAr. But if the manager is maximizing z, as she might well do if the controller were basing their pay on the measure of z, we write z as a function of r_2:

$$z = A(r - r_2)[a + br_2]$$

which gives the first-order condition

$$r_2 = r/2 - a/2b$$

Then y becomes

$$y = Ar_1 = A[r/2 + a/2b]$$

Thus, under these specifications at least half of the resources are devoted to y, even though the manager is maximizing z. The extent of the diversion is greater, the larger the parameter b is relative to a. Clearly the desirability of paying according to the proxy z depends on how manipulable it is, that is, on the relative sizes of a and b.

The two models that have been presented in this section are applicable when output of individuals or teams is at least somewhat measurable. When this is not the case, managers and controllers must devise other incentives for their employees.

4. A CLASSIFICATION OF ORGANIZATIONS

In this section we first present a classification of organizations based on the measurability of their output and work activities. These measurability characteristics affect the strategies of the actors, in particular the degree of freedom of action that controllers and managers give to their subordinates. In the second part of the section we present a classification that takes into account both the measurability characteristics and the strategies selected.

Our scheme is closely linked to the one presented by Wilson (1989, Chapter 9).[4] His scheme is based on two variables: whether the work activity can be observed and whether the final output or outcomes of the work activity can be measured.[5] In his terminology, where both can be observed, we have a production organization, where final output but not work activity can be observed, we have a craft organization, where work activity but not final output can be observed, it is a procedural organization and where neither can be observed, it is a coping organization. We shall not describe his conclusions in detail; the reader is referred to his book for elaboration. Our scheme differs from his in some details, partly because we include some cases where output is measured accurately and partly because we use the conclusions of the two models presented in the previous section.

Let us consider first the case where final output can be measured with reasonable accuracy, as in the case of the single owner of a firm controlling the manager, an injured plaintiff hiring a lawyer or a university athletic director controlling the coach of a football team. Where the final output can be measured accurately, the prediction of the model is that the controller will give the manager a great deal of freedom of action with respect to the organization of the work activity and the rewarding of the workers. In this case it doesn't matter whether the work activity can be observed, since the final output (profits or victory) is a sufficient statistic.[6]

Next let us consider a manager supervising a team of workers. The effort the manager devotes to measuring the final output as opposed to observing the work activity of the team members will of course depend on the costs of measurement. Where output is relatively easy to measure but work activity is difficult to observe, as in the case of police detectives or skilled construction workers, the model predicts that the manager will give the team a good deal of freedom in doing the work (Wilson's craft organizations). The desirability of this strategy also depends on whether conditions are suitable for the development of a sense of mission or of *esprit de corps* within the team, so that the team members can observe and motivate each other. Where conditions for this are not suitable, such as where the members of the teams must continually change, the manager may choose to monitor work activity as well as the final output.

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[4] Wilson's (1989) book contains interesting descriptions of successful organizations, in particular the German Army in the Second World War and the Texas Department of Corrections in the 1960s and 1970s. Summaries of these descriptions are provided in an appendix that is available on request. For our purposes the German Army is an example of an organization with strong *esprit de corps*, which induced a high level of EIR behaviour from the squad leaders. The Texas Department of Corrections, on the other hand, is an organization that succeeded in imposing a high level of rule obedience on the prisoners, in a way that probably made them better off than in other states.

[5] Wilson (1989) actually uses the terms output and outcomes for his two variables, but to make the terminology more consistent with the one I have been using I shall refer to the first variable as work activity and to the second one as final output or sometimes simply as output.

[6] Wilson (1989) does not consider this case because he is dealing only with public organizations, where the measurement of final output is never very accurate. His discussion of production organizations makes the point that managers will generally try to reward workers according to measured performance, but he stresses that the measures of output are generally incomplete and lead to the production of measured output instead of true output. In our terminology he is talking about proxies that can be manipulated.

It may be that the organization's or the team's or the worker's output can be measured by a proxy, which is a biased or manipulable measure of true output. If the proxy is easily measured and the degree of manipulability is small, the controller or the manager may find it optimal to give the employees a good deal of freedom of action and to reward primarily on the basis of the measured proxy. The desirability of this strategy depends in part on the ease of observing work activity directly and on the degree to which the work activity provides its own satisfactions to the employees. For example, in academia, promotions and salary increments are typically based on proxies, such as the numbers of publications in leading journals and numbers of citations. Presumably these are proxies for 'true scholarship'. Another example is that researchers in an agricultural research organization in a less-developed country might be rewarded on the basis of published research, even when the controller's conception of true output is technology transfer usable by the nation's farmers. The reason is that the controller cannot tell what is practical technical transfer but if the researchers can publish in leading journals they must know what transfers are feasible.

Now let us consider organizations in which both final outputs and work activities are very difficult to measure. Wilson (1989) points out that such agencies in the government tend to try to develop standard operating procedures or detailed control of work activitity, so that managers can defend themselves against outside criticism. He uses the term 'procedural organizations' to refer to agencies that succeed in this strategy. In our framework, imposing a detailed set of rules may be an optimal strategy for a controller or a manager. This is likely to be the case where it is impossible to develop a sense of mission or *esprit de corps* within the agency or team.

Another strategy for controllers of such agencies is to build strong bureaucracies through selection and retention practices. In France and Japan national leaders developed a strong higher-category civil service by selecting the cream of the universities' graduates, assigning them to particular agencies where they remained during their careers, protecting them from political interference, providing them with pensions and promoting on the basis of seniority through mid-career and on the basis of merit as assessed by the top levels for promotion into those levels [see the detailed description of policies in Silberman (1993)]. These practices led to a civil service with a strong sense of mission and loyalty to the agency. The result is that there are in these countries agencies and teams within agencies that are given considerable freedom of action in organizing their work. Despite the absence of measures of agency output or work activity, the daily work of the civil servants is not controlled in detail by a political authority or a supervisor (e.g. Wilson, 1989, Chapter 16). Moreover, government agencies in these countries have a reputation for efficiency. The educational system is one example in which there are now international comparisons of what students actually learn (Postlethwaite and Wiley, 1992) and both France and Japan tend to score well on these assessments. While broader societal influences also matter in these educational outcomes, the role of strong educational bureaucracies seems to be very important. It is interesting that these excellent educational outcomes are not achieved by rewarding teachers or schools in any mechanical way on the basis of test scores.

Another is to tighten controls on work activity and to relate the imposed procedures as closely as possible to true output of the agency or to move downward in the table. Still one-third is to remain within the upper left-hand corner and try to create conditions in which the organization will develop internal mechanisms to reward type 2 effort. This strategy would seem to have to rely on the selection of capable and motivated employees, as in the Germany Army in the Second World War (see footnote 4).

The persistence of organizational efficiency or inefficiency can be understood in the light of the incentives facing individual members. Where neither rule obedience nor EIR behaviour is common, the individual employee is not likely to be punished for rule disobedience nor rewarded for EIR behaviour (Clague, 1993), but where the members have a sense of mission and *esprit de corps*, the individual employee who slacks off is likely to be noticed and sanctioned, at least by peer pressure. In such an organization the measurement of individual effort is likely to be more accurate, and according to the model in Section 3, a given reward for good performance has a greater effect on effort when that performance is measured more accurately. Moving from a 'bad' equilibrium to a 'good' one requires shaking up the organization. Staffing the organization with capable and energetic people would seem to increase the chances of ending up in the good equilibrium, in part because such people do not mind hard work and would prefer to be carrying out activities that they consider to be productive.

Another way in which the controller might implement the third strategy of rewarding type 2 effort, apart from selecting good employees, is to conduct periodic audits of agency activity. The controller would bring in outside experts, who would interview the actors and form an impression of whether the actors knew what they were doing and had acted sensibly on particular occasions. The outside experts might well be able to assess the expertise of the employees and the level of *esprit de corps* within the agency; both of these are criteria on which to judge the manager.

One important aspect of organizational behaviour and performance is not captured by the formal framework presented in Sections 2 and 3. In our framework there is a single controller. In real world governments the civil service is subject to multiple masters: many individual politicians in the legislative and executive branches and many interest groups that can influence the politicians. The existence of these multiple sources of control helps to explain why managers of organizations resort to procedural solutions even when some proxies for output are available and why government agencies are frequently micromanaged [Wilson (1989) discusses these problems in detail]. Part of the solution to government inefficiency may be to persuade the politicians to allow for a more unified governance of agencies. This may be a Utopian suggestion when politicians have strong incentives to micromanage (McCubbins *et al.*, 1987).

5. DETERMINANTS AND CONSEQUENCES OF EFFICIENT BUREAUCRACIES FOR ECONOMIC DEVELOPMENT

Public bureaucracies are subject to the control of the political authorities. The nature of the political authority and the goals of the ruling interest will have a lot to do with

TABLE 1. *Types of organizations*

*	*Output not measurable*	*Output measurable*
Freedom of action	Autonomous: (Japanese, LDC Bureaucracies)	Performance (private firms, athletic teams)
Work activity closely monitored	Procedural (Social Security administration)	Micromanaged (Agency for International Development)

In summary, organizations can be classified according to the degree to which final outputs and work activity can be observed and they can also be classified according to the degree of freedom of managers and workers to organize and carry out their daily work and according to the basis on which they are paid. There is some connection between the two classifications, in that measurability of output tends to be associated with performance-based rewards and freedom of action of managers or teams, but the connection is not perfect. Our scheme is a mixture of the two types of classification. In our scheme there are two variables: measurability of the final output and freedom of action of the managers or teams to organize and carry out their work. This gives a four-way classification as shown in Table 1.

In the upper right-hand corner of Table 1 we have organizations with measurable outputs and freedom of action. In these cases, pay is likely to be related to performance, since output is easy to measure and, hence, we call these performance based. Examples are private firms, athletic teams and lawyers operating on contingency fees. In the lower left corner of Table 1 we have organizations without measurable output but with detailed control over the daily activities of workers and detailed rules that managers must follow. This category is essentially what Wilson (1989) calls procedural organizations and we adopt that term. These organizations may be reasonably efficient, given their constraints, depending on how sensible the procedures are and how well they are enforced. In the lower right-hand corner of Table 1 are organizations for which some measures of outputs could be devised, but this strategy is not followed by the controllers or managers. These are called micromanaged and this pejorative term is justified by the fact that the organizations are less efficient than they could be under alternative arrangements. In the upper left-hand corner of Table 1 are organizations without measurable output but with freedom of action in organizing work (though generally not freedom in devising their own reward schemes for workers). These organizations can be called autonomous, since they are controlled neither by measures of their output nor by detailed controls on work activity. This category includes both highly efficient and highly inefficient organizations, depending on whether the organizations create incentives to elicit type 2 effort from members. Within the category of autonomous organizations are the efficient Japanese government agencies and some of the inefficient bureaucracies of Third World governments, where there is neither rule obedience nor EIR behaviour.

Table 1 illustrates alternative strategies for reforming the inefficient bureaucracies in the upper left-hand corner. One is to attempt to measure outputs and to reward according to the measures or to move toward the upper right-hand corner of the table. This strategy is imaginatively and forcefully advocated by Klitgaard (1991, 1994).

the character of the bureaucracy. This point will be illustrated by a few examples of polities that developed efficient bureaucracies. It is also clear that under the right conditions an efficient public bureaucracy can make an important contribution to economic development, not only by providing public goods but also by reinforcing the legitimacy of the political regime. Examples of highly efficient bureaucracies are provided by France, Japan and Botswana.

The description of the development of bureaucracy in France and Japan is based on the interesting book by Silberman (1993). In France under Napoleon and in Japan after the Meiji Restoration, there was a ruling group that had displaced an aristocracy based on birth. The new ruling groups were not of aristocratic birth and they had challenged the right of the previous aristocracy to rule by proclaiming equality (at least of opportunity) as an important political principle. In each case the ruling group faced challenge from other aspirants for political power, who asked, why you and not us? Among the other aspirants were those who called for elections and parliamentary government. In both cases the response of the new ruling group was to elevate the Emperor as the representative of the people and to initiate the establishment of a national bureaucracy, advisory to the Emperor, whose members were selected on the basis of merit. The rules for selection and promotion of the new civil service limited the ability of the ruling group to derive private benefit from their possession of political power, but they also served, particularly in Japan, to deflect the challenges of other potential ruling groups by limiting parliamentary control over the bureaucracy. The bureaucracy justified itself by acting in the national interest.

The effects of a strong bureaucracy on economic development of course depend on the goals of the ruling group. In some circumstances a strong bureaucracy can stifle economic development by limiting the freedom of action of business, as happened in China in the fifteenth century (Jones, 1981) and India in recent decades. In the case of Japan the overriding goal of the ruling group was economic development for the purpose of building military strength and this goal was pursued very effectively by the bureaucracy. The bureaucracy oversaw the provision of important public goods: the construction of a physical infrastructure (including irrigation), the establishment of universal primary education by the early 1900s, the development of agricultural research and extension, the recruitment of foreign technical experts in many fields, the founding of publicly owned factories that were soon turned over to private owners and the development of modern systems of taxation and finance (including the postal savings system).

In light of the discussion in the previous section, it is interesting that the strategy for running the bureaucracy efficiently was not one of attempting measurement of outputs of individuals or teams and rewarding on the basis of performance. Rather it was one of building a sense of mission and *esprit de corps*. Ambitious and intelligent people would rather be doing something constructive than sitting on their hands. Those who have excelled in a highly competitive school system are not averse to hard work. The degree of elitism in the Japanese schools was extraordinary. Something like one-tenth of 1% of primary students attained entry into the 'numbered high schools', which constituted the only route to the elite universities, which constituted the only route into the civil service (Silberman, 1993, p. 210).

Botswana is cited as a remarkable example of successful democracy on a continent that has not been hospitable to this form of government. It seems, however, that the efficiency of the civil service is even more remarkable than its democratic political institutions. Political scientists who have studied the country have characterized the political system as a one-party state in which opposition parties are allowed to compete according to the fully democratic constitutional rules (see Hadenius, 1992), but in which these parties have not succeeded in offering a politically viable alternative government to the electorate [see Picard (1987), Holm (1988) and several chapters in Stedman (1993)]. The electoral strength of the dominant Botswana Democratic Party (BDP) derives from traditional sources of authority of the cattle-owning elite, as well as its very successful management of the economy through its highly capable civil service. The civil service itself, in continuity with its colonial inheritance, sees its job as the cultivation of support for the political system not just through management of the economy and delivery of public services but also through extensive consultation with the public through traditional sources of authority. The traditional tribal political system was hierarchical and authoritarian, but contained an element of openness to criticism in the *kgotla* or village assembly at which the chiefs listened to opinions and complaints and all were allowed to speak. The civil service has made extensive use of *makgotla* (the plura of *kgotla*) in the 'selling' of its policy initiatives.

Botswana's civil service, like that of other African countries, was inherited from the colonial period. The country was unusual in the gradualness of its policy of localization or replacement of expatriates by nationals in the civil service. The political elite was willing to continue to rely on expatriate expertise in top policy-making positions during the 1970s and it has continued to make extensive use of foreign technical expertise. The extreme lack of national university and secondary school graduates after independence of course contributed to this policy, but it was remarkable that the political elite in the BDP maintained a policy of not 'lowering standards' in the recruitment and promotion of nationals in the civil service (Picard, 1987, p. 205). In the 1969 electoral campaign the opposition parties made localization an issue, with the aid of the Botswana Civil Servants Association and the government announced a more vigorous policy in the subsequent years, but the number of expatriates in both the civil service and the formal private sector continued to grow, although their share declined and they came to be used primarily in scientific and professional rather than policy-making positions. It has been an unusual configuration of political power that has allowed the BDP to maintain the civil service as an autonomous, efficient and honest entity that has served the interests of the ruling elite extremely well while at the same time helping the country to develop. The political elite in the BDP are owners of large herds of cattle, who have used their chiefly status to retain the support of their followers in rural areas. At the same time they have entered the top levels of the national government in the cabinet and the civil service and their civil service and commercial cattle production activities have been conducted simultaneously.

The civil service commands extremely high salaries (Picard, 1987, p. 220) and one would imagine great prestige. It seems to be remarkably free of personal corruption and it has conceived and implemented many highly successful development projects and policies. The Botswana civil service seems to be an excellent example of an organization with *esprit de corps* that encourages EIR behaviour. Being kept free from political interference, the civil service has maintained its high level of performance and by performing its job well it has been able to expand in size and to increase its own levels of pay. While doing these things, it has recruited, trained and promoted individuals from a culture with virtually no experience in bureaucracy. This outcome is testimony to the powerful incentives, both monetary and social, provided to individuals in a strong and successful bureaucracy.

What has the bureaucracy accomplished for economic development in Botswana? Among the accomplishments described in Harvey and Lewis (1990) and Norberg and Blomstrom (1993) are the following. The government established a stabilization fund right after independence to cope with the inevitable fluctuations in the mineral and cattle economy and managed that fund in such a way as to void sharp downturns in government spending. Projects were not left half completed when the international terms of trade turned adverse. The scale and pace of projects were kept within the administrative capacity of the government and the economy to implement them. Macroeconomic policy followed World Bank guidelines, avoiding excessive inflation, maintaining positive or near positive real interest rates, eschewing exchange controls and quantitative import restrictions and keeping tariff protection very modest. The government was also a good negotiator with foreign trading partners (South Africa, Zimbabwe and the EEC in particular), foreign corporations in mining and manufacturing operations and international donors.

The state has played quite a large role in the productive economy, not only with extensive infrastructure projects and education (sorely needed, because of colonial neglect), but in several parastatal corporations, which, however, have been run largely along commercial lines and have not been recipients of state subsidies or protection.

Remarkably, the government has anticipated some of the country's long-run problems, such as the periodic droughts that have plagued the country and the foot-and-mouth disease that weakens the herds and threatens beef exports to the EEC. The country enjoyed good weather during the first 15 years of independence, but during this period the government undertook studies of the weather cycle and put in place institutions and procedures for providing emergency relief well before disaster struck in the early 1980s. Some of the government's policy initiatives were successfully designed to help the owners of small herds of cattle obtain better prices for their output (Harvey and Lewis, 1990, pp. 84–85). Not all the government's initiatives were successful, in particular the Tribal Lands Grazing Policy, designed to cope with the problems of overgrazing, failed to achieve its objective and was continued perhaps because it benefited particularly the large-herd owners that were the government's political base of support, but the record on the whole is one of a remarkably successful management of development, with a good deal of autonomy in the civil service itself, enabling it to undertake policies that helped the whole country or poorer people in particular.

This section has illustrated how an effective civil service has promoted development in particular countries. Some evidence of a broader kind comes from cross-section studies of economic growth which contain measures of institutional characteristics of countries. The characteristics include 'expropriation risk', 'rule of law', 'repudiation of contracts by government', 'corruption in government', and 'quality of bureaucracy'. These subjective ratings by experts are contained in overall assessments of countries that are sold by investment advisory services. The variables are described more fully in Keefer and Knack (1994) and Knack (1994), who also present the following results. Holding constant a standard set of variables in cross-country growth regressions, measures of institutional environment help to explain economic growth. However, the various measures of institutional environment are quite highly correlated with one another, so that it is impossible to disentangle the effects of bureaucratic quality from the other institutional measures. Still, the performance of the civil service is an important component of the institutional environment and these results lend support to the proposition that a strong civil service generally facilitates development. Another piece of evidence on the effects of bureaucracy on development comes from the interesting study by Rauch (1994), who finds that adoption of civil service reform in US cities in the early twentieth century increased the share of municipal expenditures devoted to infrastructure investment.

6. CONCLUDING OBSERVATIONS

Understanding bureaucracy is essential to understanding economic development. It seems clear that an efficient bureaucracy can appear in an underdeveloped country and that it can play a key role in promoting development. An efficient bureaucracy can provide public goods that the market will not supply and it can support political stability and secure property rights by consulting with civil society, delivering public services and refraining from corrupt activities. Such a bureaucracy can elicit rule obedient behaviour from the citizens in paying taxes and complying with other regulations (Clague, 1993; Campos *et al.*, 1994). In this arena there are also 'good' and 'bad' equilibria; in the good equilibria, the probability of detection of violation of the rules is relatively high and overall compliance with the rules tends to strengthen citizen attitudes that support rule obedience. An interesting example of this interaction is in Japan's safe streets (*The Economist*, 1994), where an efficient bureacucracy pays attention both to solving crimes and to promoting a favourable attitude in the population toward the police; minor infractions are politely forgiven, while serious crime is severely punished.

Just as there are examples where civil service efficiency leads development, there are also examples where it lags. In the nineteenth century the United States developed very successfully without a strong civil service; in that country there was a social consensus that made property rights very secure and a court system that enforced the common law reasonably impartially. The civil service did not formally come into existence until the 1880s and it has remained under the control of politicians to a much greater extent than in Europe or Japan. Latin American countries have generally had weak civil services [see, for example, Evans (1992) on Brazil] yet have had periods of relatively successful development.

The argument of this paper may be summarized in the following points. It is very difficult to induce public agencies to perform efficiently because their outputs are difficult to measure. It may be possible to overcome these problems by imaginative measurement of performance and tying rewards to measured performance, but as yet these techniques have not been successfully applied on a wide scale. Quite a number of countries have managed to overcome these problems by creating an elite civil service rather than by imaginative measurement of performance. However it is created, a strong civil service can be of great benefit to economic development.

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REFERENCES

Campos, E., Levi, M. and Sherman, R. (1994). *Rationalized Bureaucracy and Rational Compliance.* IRIS Working Paper No. 105, April.

Clague, C. (1993). 'Rule Obedience, Organizational Loyalty, and Economic Development', *Journal of Institutional and Theoretical Economics*, **149**, 393–414.

DeIulio, J. J. (1987). *Governing Prisons: A Comparative Study of Correctional Management.* The Free Press, Yew York.

The Economist (1994). 'The Secret of Japan's Safe Streets', *The Economist*, 16 April, 38–40.

Evans, P. (1992). 'The State as Problem and as Solution: Embedded Autonomy and Adjustment', in S. Haggard and R. Kaufman (eds), *The Politics of Economic Adjustment: International Constraints, Distributive Politics, and the State.* Princeton University Press, Princeton.

Fishlow, A., Gwin, C., Haggard, S., Rodrik, D. and Wade, R. (1994). *Miracle or Design: Lessons from the East Asian Experience.* Policy Essay No. 11, Overseas Development Council, Washington, DC.

Hadenius, A. (1992). *Democracy and Development.* Cambridge University Press, Cambridge.

Harvey, C. and Lewis, S. R. (1990). *Policy Choice and Development Performance in Botswana. St Martin's, New York.*

Hayami, Y. and Ruttan, V. W. (1985). *Agricultural Development: An International Perspective.* Johns Hopkins University Press, Baltimore.

Holm, J. D. (1988). 'Botswana: A Paternalistic Democracy', in L. Diamond, J. J. Linz, and S. M. Lipset (eds), *Democracy in Developing Countries, Vol 2: Africa.* Lynne Reiner Publishers, Boulder.

Jones, E. L. (1981). *The European Miracle: Environments, Economies, and Geopolitics in the History of Europe and Asia.* Cambridge University Press, Cambridge.

Keefer, P. and Knack, S. (1994). 'Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures', *Economics and Politics*, in press.

Klitgaard, R. (1991). *Adjusting to Reality:Beyond 'State versus Market' in Economic Development.* ICS Press, San Francisco.

Klitgaard, R. (1994). *Beginning at the End: An Approach to Institutional Reform in Higher Education.* IRIS Working Paper no. xx, May.

Knack, S. (1994). 'Institutions and The Convergence Hypothesis: The Cross-National Evidence', *Public Choice*, in press.

Lazear, E. P. and Rosen, S. (1981). 'Rank-Order Tournaments as Optimum Labor Contracts', *Journal of Political Economy*, **89**, 841–865.

McCubbins, M. D., Noll, R. G. and Weingast, B. R. (1987). 'Administrative Procedures as Instruments of Political Control', *Journal of Law, Economics, and Organization*, **3**, 242–277.

Norberg, H. and Blomstrom, M. (1993). 'Dutch Disease and Management of Windfall Gains in Botswana', in M. Blomstrom and M. Lundahl (eds), *Economic Crisis in Africa: Perspectives on Policy Responses.* Routledge, London.

Parsons, D. O. (1984). 'The Employment Relationship: Job Attachment, Work Effort, and the Nature of Contracts', in O. Ashenfelter and R. Layard (eds), *Handbook of Labor Economics vol. 2.* North-Holland, Amsterdam.

PICARD, L. (1987). *The Politics of Development in Botswana: A Model for Success?* Lynne Reiner Publishers, Boulder.

POSTLETHWAITE, T. N. and WILEY, P. F. (1992). *The IEA Study of Science II: Science Achievement in Twenty-three Countries.* Pergamon Press, Oxford.

RAUCH, J. E. (1994). *Bureaucracy, Infrastructure, and Economic Growth: Evidence from U.S. Cities During the Progressive Era.* Working paper, UCSD and IRIS Working Paper No. 111, June.

SILBERMAN, B. S. (1993). *Cages of Reason: The Rise of the Rational State in France, Japan, the United States, and Great Britain.* University of Chicago Press, Chicago.

STEDMAN, S. J. (ed.) (1993). *Botswana: The Political Economy of Democratic Development.* Lynne Reiner Publishers, Boulder.

VAN CREFELD, M. (1982). *Fighting Power: German and U.S. Army Performance, 1939–1945.* Greenwood Press, Westport.

WILSON, J. Q. (1989). *Bureaucracy: What Government Agencies Do and Why They Do It.* Basic Books, New York.